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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER
SHOSHU, C

ART UNIT PAPER NUMBER
1714

DATE MAILED: 04/20/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/283,192

Applicant(s)

Kurabayashi

Examiner

Callie Shosho

Group Art Unit

1714



☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-58 is/are pending in the application

Of the above, claim(s) 19-58 is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-18 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☒ Claims 1-58 are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ One of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5-6

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-18, drawn to ink composition, classified in class 523, subclass 160.
 - II. Claims 39-44, drawn to ink set, classified in class 106, subclass 31.60.
 - III. Claims 45-52, drawn to image recording process, classified in class 524, subclass 556.
 - IV. Claims 19-38 and 53-58, drawn to ink cartridge, recording unit, and image recording apparatus, classified in class 347, subclass 100.

2. The inventions are distinct, each from the other because:
 - (a) Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the ink set does not require a pigment having an anionic group or a dispersant having an anionic group. The subcombination has separate utility such as ink for writing instrument such as ball-point pen.

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(b) Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the process can be practiced with another materially different product such as a hot melt ink or an ink comprising dye only or an ink comprising pigment and dispersant each having anionic groups. In addition, the product as claimed can be used in a materially different process of using the product such as gravure or lithographic process.

(c) Inventions IV and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination does not require that the ink comprise pigment with anionic group or dispersant with anionic group. The subcombination has separate utility such as ink for writing instrument.

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(d) Inventions II and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the process can be practiced with another materially different product such as a single ink, and not an ink set. In addition, the product as claimed can be used in a materially different process of using the product such as gravure or lithographic process.

(e) Inventions IV and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination does not require that the ink comprise specific colors of inks as required in the ink set. Further, the combination does not require that the second ink contain a dye containing anionic groups. The subcombination has separate utility such as ink for writing instrument, ink for gravure apparatus, or ink for lithographic apparatus.

(f) Inventions III and IV are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced

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by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process as claimed can be practiced by another and materially different apparatus, ink cartridge, and recording unit such as one using a continuous feeding means instead of an ink cartridge or an apparatus, ink cartridge, and recording unit such as one using a different means for ejecting the ink from the apparatus such as an acoustic means.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and/or have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Jean Dudek on 4/14/00 a provisional election was made with traverse to prosecute the invention of ink composition, Group I, claims 1-18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-58 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently

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named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

Priority

6. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 4/1/98 and 3/26/99. It is noted, however, that applicant has not filed a certified copy of the three Japanese applications as required by 35 U.S.C. 119(b).

Drawings

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: reference number 24 in Figure 1. Correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 10 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 10 and 17 disclose that the pigment and the coloring material have “substantially” the same color. There is confusion in the scope of the claim because it is not clear what is meant by “substantially”. How is it determined that the colors are the same? How close must the color of the pigment and the color of the coloring material be? It is noted that the specification does not provide a standard for ascertaining the requisite degree, and thus, one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102/103

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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12. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Harris et al. (U.S. 5,886,091).

Harris et al. disclose an ink which contains a pigment and colored polyurethane (col.2, line 11, col.4, lines 62-65, and col.6, lines 17-18).

Although there is no explicit disclosure that the colorant is encapsulated in the polyurethane, it is asserted that the presently claimed property of encapsulation would obviously been present once the Hesler et al. colored polyurethane is formed given that the colored polyurethane is prepared by polymerizing monomers in the presence of the colorant which would result in encapsulation of the colorant in the resulting polyurethane (col.7, lines 21-35). Note In re Best, 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection made above under 35 USC 102.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 1-6, 8-10, 12-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (U.S. 5,851,274) in view of either Zou et al. (U.S. 5,622,548) or Sakuma et al. (U.S. 5,877,235).

Lin discloses an ink composition which contains pigment such as carbon black which is present with or without a dispersant. When the carbon black is chemically modified with anionic or cationic functional groups, it is dispersed without a dispersant. If the carbon black is not chemically modified, a dispersant is necessary. The dispersant contains hydrophilic anionic and cationic functional groups (col.11, lines 54-62, col.13, lines 17, and col.14, lines 42-45).

The difference between Lin and the present claimed invention is the requirement in the claims of a resin encapsulating a coloring material.

Lin discloses that the ink contains mixtures of colorants, but does not explicitly disclose the use of resin encapsulating a coloring material.

Zou et al., which is drawn to ink compositions, discloses the use of resin encapsulated colorant wherein the colorant is a pigment or dye (col.4, lines 33-36 and col.17, lines 1-30) in order to produce an ink with low bleed through, high color strength, and high image density (col.4, lines 5-7).

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Alternatively, Sakuma et al., which is also drawn to ink compositions, discloses the use of resin encapsulated dye or pigment (col.2, lines 42-46, and col.4, lines 46 and 62-64) in order to produce an ink with improved waterfastness and fixation without impairing the color forming properties of the coloring material (col.1, lines 62-65).

Although there is no explicit disclosure in either Lin, Zou et al. or Sakuma et al. that the colorant which is encapsulated in either Zou et al. or Sakuma et al. is substantially the same color as the pigment disclosed by Lin, it is within the skill level of one of ordinary skill in the art to recognize that a single ink should be made from one color in order to enhance the color strength and image density of the ink and that using a coloring material and pigment with substantially different colors would result in an ink having uneven color, low color strength, and poor image density.

In light of the motivation for using resin encapsulating a coloring material disclosed by either Zou et al. or Sakuma et al., it therefore would have been obvious to one of ordinary skill in the art to use this resin encapsulated colorant in the ink of Lin in order to produce an ink with low bleed through, high color strength, and high image density or improved waterfastness and fixation, and thereby arrive at the claimed invention.

15. Claims 7 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of either Zou et al. or Sakuma et al. as applied to claims 1-6, 8-10, 12-15, and 17 above, and further in view of Sacripante et al. (U.S. 6,025,412).

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The difference between Lin in view of either Zou et al. or Sakuma et al. and the present claimed invention is the requirement in the claims of resin encapsulated colorant wherein the resin contains anionic or cationic groups.

Sacripante et al., which is drawn to ink composition, discloses the use of polymer encapsulated colorant wherein the polymer has attached hydrophilic groups which include anionic and cationic groups (col.4, lines 36-51). The motivation for using such a resin encapsulated colorant is to produce an ink with excellent waterfastness and high print quality (col.10, lines 7-8).

In light of the motivation for using specific resin encapsulated colorant disclosed by Sacripante et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use this resin encapsulated colorant in the ink of Lin in order to produce an ink with excellent waterfastness and high print quality, and thereby arrive at the claimed invention.

16. Claims 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of either Zou et al. or Sakuma et al. as applied to claims 1-6, 8-10, 12-15, and 17 above, and further in view of Hotomi et al. (U.S. 5,376,169).

The difference between Lin in view of either Zou et al. or Sakuma et al. and the present claimed invention is the requirement in the claims of microcapsules.

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Hotomi et al., which is drawn to ink composition, discloses the use of microcapsule particles which contain dye or pigment (col.3, lines 54-57) in order to produce an ink with satisfactory color density, good dispersability, and no ink-emitting trouble (col.3, lines 50-53).

In light of the motivation for using microcapsules disclosed by Hotomi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use microcapsules in the ink of Lin in order to produce an ink which has satisfactory color density, good dispersability, and no ink-emitting trouble, and thereby arrive at the claimed invention.

17. Claims 1, 5, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsumi et al. (U.S. 6,031,019).

Tsutsumi et al. disclose an ink composition which contains a colorant such as a pigment or dye encapsulated into polymer particles. It is further disclosed that not all the colorant present in the ink is encapsulated into the polymer particles. Thus, it is clear that the ink of Tsutsumi et al. contains pigment and resin encapsulating a coloring material as presently claimed. It is further disclosed that the ink contains a dispersant (col.3, line 65-col.4, line 12 and col.4, lines 20-22).

The deficiency in Tsutsumi et al. is that there is no explicit disclosure that the encapsulated and non-encapsulated colorant have substantially the same color.

Given that the ink contains colorant which is encapsulated in a resin and that some of the same colorant is present in the ink in non-encapsulated form, it therefore would have been

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obvious to one of ordinary skill in the art that the encapsulated and non-encapsulated colorant would have substantially the same color, and thereby arrive at the claimed invention.

18. Claims 2-4, 6-7, and 11-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsumi et al. as applied to claims 1, 5, and 8-10 above, and further in view of Yui et al. (U.S. 5,948,155), Sacripante et al. (U.S. 6,025,412), and Hotomi et al. (U.S. 5,376,169).

The difference between Tsutsumi et al. and the present claimed invention is the requirement in the claims of (a) specific type of pigment and specific type of dispersant, (b) specific type of resin, and (c) microcapsules.

With respect to difference (a), Yui et al., which is drawn to ink compositions, discloses the use of pigment such as carbon black which is chemically modified with anionic or cationic functional groups (col.4, line 21 and col.5, lines 15-18). Further, Yui et al. disclose the use of dispersants which have anionic or cationic functional groups in order to improve dispersion stability (col.5, line 42-col.6, line 28). Using this specific pigment and specific dispersant will produce an ink with good disperability, good image quality, good fixation, and reliability (col.2, lines 16-20).

In light of the motivation for using specific types of pigments disclosed by Yui et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use this pigment and this dispersant in the ink of Tsutsumi et al. in order to produce an ink with

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good disperability, good image quality, good fixation, and reliability. and thereby arrive at the claimed invention.

With respect to difference (b), Sacripante et al., which is drawn to ink composition, discloses the use of polymer encapsulated colorant wherein the polymer has attached hydrophilic groups which include anionic and cationic groups (col.4, lines 36-51). The motivation for using such a resin encapsulated colorant is to produce an ink with excellent waterfastness and high print quality (col.10, lines 7-8).

In light of the motivation for using specific resin encapsulated colorant disclosed by Sacripante et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use this resin encapsulated colorant in the ink of Tsutsumi et al. in order to produce an ink with excellent waterfastness and high print quality, and thereby arrive at the claimed invention.

With respect to difference (c), Hotomi et al., which is drawn to ink composition, discloses the use of microcapsule particles which contain dye or pigment (col.3, lines 54-57) in order to produce an ink with satisfactory color density, good dispersability, and no ink-emitting trouble (col.3, lines 50-53).

In light of the motivation for using microcapsules disclosed by Hotomi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use microcapsules in the ink of Tsutsumi et al. in order to produce an ink which has satisfactory color

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density, good dispersability, and no ink-emitting trouble, and thereby arrive at the claimed invention.

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art discloses resin encapsulated colorants:

Elwakil (U.S. 5,665,429)

Nakamura et al. (U.S. 5,961,704)

The following prior art discloses chemically modified pigments:

Johnson et al. (U.S. 5,922,118)

Lin et al. (U.S. 5,531,818)

Nagai et al. (U.S. 5,879,439)

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie Shosho whose telephone number is (703) 305-0208. The examiner can normally be reached on Mondays-Thursdays from 7:00 am to 4:30 am. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

CS

Callie Shosho
4/19/00

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